Cambium Networks™

PTP 820S FCC/IC 24 GHz Licensed Microwave Radio

All-Outdoor

Specifications

RADIO

- 24.05 – 24.25 GHz
- Channel Size: 20/30/40/50/60 MHz
- 1+0, 1+1 HSB, 2+0

Radio Features
- QPSK to 2048 QAM w/ACM
- Advanced Frequency Reuse (AFR)

ETHERNET

Ethernet Interfaces
- Traffic Interfaces – 1 x 10/100/1000Base-T (RJ-45) and 2 x 1000base-X (SFP) or 2 x 10/100/1000 Base-T (electrical SFP)
- Management Interface - 1 x 10/100 Base-T (RJ-45)
- Optical SFP Types - Optical 1000Base-LX (1310 nm) or SX (850nm)
  Note: SFP devices must be of industrial grade (-40°C to +85°C)

Ethernet Features
- MTU – 9600 Bytes
- Quality of Service
  - Multiple Classification criteria (VLAN ID, p-bits, IPv4, DSCP, IPv6 TC, MPLS EXP)
  - 8 priority queues
  - Deep buffering (configurable up to 64 Mbit per queue)
  - WRED
  - P-bit marking/remarking
- 4K VLANs
- VLAN add/remove/translate
- Frame Cut Through – controlled latency and PDV for delay sensitive applications
- Header De-Duplication – Capacity boosting by eliminating inefficiency in all layers (L2, MPLS, L3, L4, Tunneling – GTP for LTE, GRE)
- Adaptive Bandwidth Notification (ABN)
- Ethernet OAM – ITU-T Y.1731 FM

SYNCHRONIZATION

Synchronization Distribution
- Sync Distribution over any traffic interface (GE/FE)
- Sync-E (ITU-T G.8261, G.8262)
- SSM/ESMC Support for ring/mesh applications (ITU-T G.8264)
- Sync-E Regenerator mode, providing PRC grade (ITU-T G.811) performance for smart pipe applications.

IEEE-1588
- Optimized Transport for reduced PDV
- IEEE-1588 TC

STANDARD

Supported Ethernet Standards
- 10/100/1000base-T/X (IEEE 802.3)
- Ethernet VLANs (IEEE 802.3ac)
- Virtual LAN (VLAN, IEEE 802.1Q)
- Class of service (IEEE 802.1p)
- Provider bridges (QinQ – IEEE 802.1ad)
- Link aggregation (IEEE 802.3ad)
- Auto MDI/MDIX for 1000baseT
- RFC 1349: IPv4 TOS
- RFC 2474: IPv4 DSCP
- RFC 2460: IPv6 Traffic Classes

Security
- AES 256-bit Encryption
- Secured protocols (HTTPS, SNMPV3, SSH, SFTP)
- Radius authentication and authorization

Standards Compliance
- EMC: EN 301 489-1, EN 301 489-4, Class B (Europe), FCC 47 CFR, part 15, class B (US), ICES-003, Class B (Canada), TEC/EMI/TEL-001/01, Class B (India)
- Surge: EN61000-4-5, Class 4 (for PWR and ETH1/PoE ports)
- Safety: EN 60950-1, IEC 60950-1, UL 60950-1, CSA-C22.2 No.60950-1, EN 60950-22, UL 60950-22, CSAC22.2.60950-22
- Ingress Protection: IP66-compliant
- Storage: ETSI EN 300 019-1-1 Class 1.2
- Transportation: ETSI EN 300 019-1-2 Class 2.3

TECHNICAL SPECIFICATION

Mechanical Specifications
- Dimensions: 230mm(H), 233mm(W), 98mm(D), 6.0kg
- Pole Diameter Range (for Remote Mount Installation): 8.89 cm – 11.43 cm

Environmental Specifications
- -33°C to +55°C (-45°C to +60°C extended)

Power Input Specifications
- Standard Input: -48 VDC
- IDU DC Input range: -40 to -60 VDC

Power Consumption Specifications
- Maximum Power Consumption: 35W

PoE Injector Mechanical Specifications
- Dimensions – 134mm(H), 190mm(W), 62mm(D), 1 kg

PoE Injector Environmental Specifications
- 33°C to +55°C (-45°C to +60°C extended)

PoE Injector Power Input Specifications
- Standard Input: -48 or +24 VDC
- DC Input range: ±(18/40.5 to 60) VDC (+18VDC extended range is supported as part of the nominal +24VDC support)

PoE Injector Interfaces
- GbE Data Port supporting 10/100/1000Base-T
- Power-Over-Ethernet (PoE) Port
- DC Power Port –40V to -60V (a PoE supporting two redundant DC feeds each supporting ±(18-60)V is available)

Specifications

TRANSMIT POWER

Transmit Power (dBM) With 1ft antenna	QPSK	8 PSK	16 QAM	32 QAM	64 QAM	128 QAM	256 QAM	512 QAM	1024 QAM	2048 QAM
Maximum Power	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6
Minimum Power	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20

Transmit Power (dBM) With 2ft antenna	QPSK	8 PSK	16 QAM	32 QAM	64 QAM	128 QAM	256 QAM	512 QAM	1024 QAM	2048 QAM
Maximum Power	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
Minimum Power	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20

RECEIVE SENSITIVITY

Rx Sensitivity (dBM)	QPSK	8 PSK	16 QAM	32 QAM	64 QAM	128 QAM	256 QAM	512 QAM	1024 QAM (strong FEC)	1024 QAM (light FEC)	2048 QAM
20 MHz	-84.0	-79.0	-77.5	-74.0	-70.5	-67.5	-65.0	-62.0	-59.0	-58.5	-55.0
30 MHz	-82.0	-77.0	-75.5	-72.0	-69.0	-66.0	-63.0	-61.0	-57.5	-57.0	-53.0
40 MHz	-81.0	-76.0	-74.0	-70.5	-68.0	-65.0	-62.5	-60.0	-56.5	-56.0	-52.5
50 MHz	-80.0	-75.0	-73.0	-70.0	-66.5	-64.0	-61.0	-58.5	-55.0	-54.5	-50.5
60 MHz	-79.0	-74.5	-72.5	-69.0	-66.0	-63.0	-60.0	-58.0	-54.4	-54.3	-50.0

ETHERNET THROUGHPUT

Throughput (Mbps)	QPSK	8 PSK	16 QAM	32 QAM	64 QAM	128 QAM	256 QAM	512 QAM	1024 QAM (strong FEC)	1024 QAM (light FEC)	2048 QAM
20 MHz	27	41	56	74	91	110	125	136	145	154	164
30 MHz	42	61	86	113	139	168	193	206	224	238	260
40 MHz	57	85	116	152	187	226	243	267	302	321	347
50 MHz	69	108	146	183	237	276	327	355	387	411	443
60 MHz	86	125	174	229	281	339	391	421	458	486	527

FCC/IC 24 GHz PTP 820S SKU list:

Part Number	Description
C240082B031A	PTP 820S Radio 24GHz,TR170,FCC,DX4,FT1,Hi,24170-24250MHz
C240082B032A	PTP 820S Radio 24GHz,TR170,FCC,DX4,FT1,Lo,24000-24080MHz
C240082B033A	PTP 820S Radio 24GHz,TR140,FCC,DX3,FT1,Hi,24220-24250MHz
C240082B034A	PTP 820S Radio 24GHz,TR140,FCC,DX3,FT1,Lo,24080-24110MHz

APPROVED ANTENNA:

Name	Description
N260082D017A	PTP 820 1' ANT, SP,26GHz, RFU-C TYPE&Std UBR220 - Andrew
N260082D019A	PTP 820 2' ANT, SP,26GHz, RFU-C TYPE&Std UBR220 - Andrew